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on

The Role of Department of Defense Biosurveillance Efforts – Including ESSENCE – in Support of the National Biosurveillance Integration System (NBIS)

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Good morning and thank you for inviting me to join you today.

I am here to discuss the work DoD is doing in biosurveillance and to describe how we are integrating our existing systems with those of other government agencies in support of the National Biosurveillance Integration System.
Over the past few years, our citizens have faced exposure to many human and animal biological threats, underscoring the need to enhance our plans to respond to biological events of national significance. The appearance of emerging and reemerging infections, such as SARS and the H5N1 strain of avian influenza, along with the ongoing threat of bio-terrorism, has highlighted the need for an innovative, integrated national disease surveillance system, such as the one proposed through the National Biosurveillance Integration System (NBIS).

In the U.S. military, we face this challenge with every operation and every deployment. The early recognition of these events using public health surveillance techniques has long been an integral part of our day-to-day work and enhances our ability to respond quickly to protect our service members' health and maximize operational readiness.

Some of the many ways we work to safeguard the health of our service members both at home and in theater include testing air, soil and water in areas where we deploy our troops, assessing their individual health, and monitoring any relevant medical surveillance data The systems that we have sponsored and cultivated can play an important role in a national networked biosurveillance community.

In addition to monitoring the health of service members, DoD has joined efforts with NBIS, Centers for Disease Control and Prevention (CDC) and other government agencies to best utilize existing surveillance capabilities to obtain the most accurate, comprehensive picture of American public health.

ESSENCE, the Electronic Surveillance System for the Early Notification of Community-Based Epidemics, is one of the Defense Department's biosurveillance systems that supports NBIS'national biosurveillance capabilities.

ESSENCE is an early warning system for biological events, including natural disease outbreaks and disease caused by the accidental or intentional release of biological agents. DoD shares their outpatient data from ESSENCE with the CDC for analysis using their BioSense system, which in turn provides reports to NBIS for integration into an overall national pattern. Through an integrated approach to surveillance, CDC and DoD analysts can definitively interpret health data, enhance situational awareness and improve response capability.

In order to capitalize on current NBIS integrated surveillance capabilities, DoD is working in coordination with NBIS' National Biosurveillance Group to establish shared reporting and improved communication. To help reach this goal, DoD has already placed a military liaison in the NBIS District of Columbia office and plans to position additional liaisons at various Combatant Command (COCOM) headquarters.

ESSENCE enables us to identify increases in the frequency of carefully defined categories of diseases occurring at military treatment facilities around the world. This detection capability provides the Military Healthcare System with the information needed to facilitate informed decision-making and enable timely response, including the allocation of any needed medical assistance, resources and supplies to control disease outbreaks and render timely medical care to those already affected.

The human and materiel resources of the Department of Defense are the most forward deployed of any U.S. government resource, and ESSENCE is no exception. ESSENCE is the nation's largest health surveillance system, with a considerable domestic and international footprint. ESSENCE gathers health data from 313 military medical treatment facilities around the world. This extensive data set provides us with significant information on symptoms and syndromes and allows us to detect outbreaks of infectious disease much sooner than ever before.

The early detection of infectious disease outbreaks using ESSENCE allows us to gain precious time in protecting individuals with immunizations and medical treatment, helps us to appropriately allocate health services and equipment, and affords us the opportunity to engage in non-pharmacological and risk communications strategies to limit the spread of disease. These benefits apply to the community immediately affected as well as to the region at large that may eventually be impacted by the disease outbreak or biological event.

For example, if an unusually high number of people in one area are being seen with influenza-like symptoms and illnesses, that information may indicate the beginnings of an influenza epidemic. By tracking the syndrome of influenza-like illness in ESSENCE, we can lessen the time it takes to determine that an outbreak is occurring. If abnormal clusters of symptoms or disease are occurring, then ESSENCE will trigger an alert to local officials, who can then investigate the situation and determine whether a concerted and coordinated public health response is required.

Since its inception in 1999, enhancements to ESSENCE's analytical capability to detect potential disease outbreaks have been implemented. New features include revised syndromic groups to address a broader range of biological threats and standardized mappings of diagnostic codes for each of the re-designed syndromic groups. Data filters identify reportable medical events like anthrax and new data sources, such as prescribed medications complement diagnostic data. One significant enhancement is the ability to display spatial clusters detected over geographic areas.

These improvements make ESSENCE more flexible in its ability to detect disease outbreaks, more compatible with military and civilian surveillance systems, and more capable of pinpointing outbreak locations that in turn allow for tailored responses by DoD public health professionals. Still, by itself it is just a software application. The critical factor is the human analyst who must interpret the automated alerts and sort out the false alarms from the real outbreaks. The DoD uses a tiered approach. The linchpin is the local military public health professional, who monitors ESSENCE with respect to their local beneficiary population. This individual is in the best position to investigate any unusual trends and immediately determine whether there is a problem and to coordinate with the local civilian public health authorities.

However, patterns across a region may also be important, so each of the Services have public health centers where epidemiologists monitor ESSENCE and other health-related data streams, interfacing with the installations and providing consultative support and assisting with on-site investigations as needed. Tying all of these separate public health networks together falls to the Armed Forces Health Surveillance Center (AFHSC). The AFHSC is a new organization that will combine several existing surveillance groups together into a DoD center that will serve as the single official source for all DoD health surveillance information. Key components of the center will include the Army Medical Surveillance Activity, the Global Emerging Infections Surveillance and Response System (GEIS), and the surveillance resources in the Deployment Health Support Directorate. The center is expected to reach initial operating capability in FY08, but it already serves as the DoD liaison with DHS's NBIS, CDC's BioSense programs and other syndromic surveillance research groups, all working together to develop the most effective techniques and methods for detecting symptoms of potential disease outbreaks, an evolving discipline of public health.

ESSENCE was originally developed to enhance our ability to detect, as early as possible, and to improve our situational awareness of potential bio-terrorist attacks in the Washington, D.C. region. Through the years, it has evolved to provide important biosurveillance information on human disease. When fully integrated into the networked biosurveillance community, the information gathered through ESSENCE and the military treatment facilities across the globe can support the overall effort to provide key decision makers with early recognition of biological events of potential national significance, and thus, facilitate national decision-making and enable timely response.

I thank you for your time today and your leadership in supporting biosurveillance in the Department of Defense. We look forward to continuing to play a role in the National Biosurveillance Integration System and enhancing the national biosurveillance network. I appreciate the opportunity to address you today, and would be happy to answer any questions you have about ESSENCE or Defense Department surveillance systems.